

REMARKS

Claims 1, 2, 4-9, 11-21, and 23- 36 are pending. Claims 1, 14, 26, 29 and 33 are independent. Favorable reconsideration and further examination are respectfully requested.

The Examiner rejected claims 1-36 under §112, first paragraph as failing to comply with the enablement requirement and requests the Applicant “to point out where support can be found for the inferred relation between the first and second link.” Claim 1 recites an inferred relation between a first Internet object and second Internet object, not between a first link and a second link. Support for claim amendments presented in the previous Amendment of January 25, 2006 can be found in the Applicants’ specification at least at the passage on page 9, lines 20-24 of Applicants’ specification and at the passage on page 10, lines 15-19, and page 17, line 26 to page 18, line 2. These passages are reproduced below for the Examiner’s convenience:

Inferred relation weighting process 32 is capable of determining the strength of inferred relation 34 between a first Internet object (query Q2) and a second Internet object (document D1), wherein an Internet object is either a document, a query, or an ecommerce transaction record (transaction record T1) and an inferred relation is a relation between Internet objects which are not directly linked. (page 9, lines 20-24)

Inferred relation weighting process 32 includes first link weighting process 36 that determines the strength of at least a first link 38 between the first non-directly linked Internet object (Q2) and a common object (D2). A second link weighting process 40 determines the strength of at least a second link 42 between the second non-directly linked Internet object (D1) and the common object (D2). (page 10, lines 15-19)

Therefore, the links are as follows:

$$Q2 \leftrightarrow D2 = 1.00 \quad D1 \rightarrow D2 = 1.00 \quad D1 \rightarrow Q2 = 0.50$$

Please note that link ($D1 \rightarrow Q2$) is an inferred relation in that it did not exist prior to inferred relation weighting process 32 processing the weight of the existing links ($Q2 \leftrightarrow D2$ & $D1 \rightarrow D2$). Please also note that inferred relation 34 has a weight of 0.50 and is a mono-directional link in that it is a one directional link from $D1 \rightarrow D2$. (17, line 26 to page 18, line 2).

In view of the foregoing passages, Applicants submit that claims 1-36 comply with §112, first paragraph.

Claims 1-36 were also rejected under §112, second paragraph for omitting essential structural cooperative relationships. The Examiner does not specifically point to any such structures, but refers to the remarks made with regard to the §112, first paragraph rejection. Applicants submit that in view of the foregoing passages from Applicants' specification, claims 1-36 comply with §112, second paragraph. In this regard, Applicants respectfully request that the §112 rejections be withdrawn.

Turning to the art rejections, all of the claims were rejected under §103 over U.S. Patent No. 6,112,202 (Kleinberg) and Associative Information Access Using DualNAVI (DualNAVI). As shown above, Applicants have amended the claims to define the invention with greater clarity. In view of these amendments, and the following remarks, withdrawal of the rejection over Kleinberg is respectfully requested.

Amended independent claim 1 is directed to an inferred relation weighting process for determining a strength of an inferred relation between a first Internet object (e.g., a query for retrieving a document) and a second Internet object (e.g., a document), where the first and second Internet objects are not directly linked. The process includes a first link weighting process for determining a first strength of a first link between the first Internet object and a common object, a second link weighting process for determining a second strength of a second link between the second Internet object and the common object, and an inferred relation weight calculation process for determining the strength of the inferred relation based on the first strength and the second strength. The weight calculation process includes determining a first array

having entries comprising the first and second strengths; determining a second array as a mathematical function of the first array; and determining a weighted sum of entries selected from the first and second arrays. The weighted sum corresponds to the strength of the inferred relation.

The applied art is not understood to disclose or to suggest the foregoing features of claim 1, particularly with respect to computing a first array having entries comprising the first and second strengths; determining a second array as a mathematical function of the first array; and determining a computing a weighted sum of entries selected from the first and second arrays such that the weighted sum corresponds to the strength of the inferred relation.

More specifically, Kleinberg describes a process for establishing a neighborhood of common or interconnecting hyperlinks. The Kleinberg process includes identifying so-called authority pages and hub pages (Web pages) from an initial set of pages and assigning scores to each page to indicate the number of links from and to the initial pages. For example, the passage of Kleinberg at col. 8, line 62 to col. 9, line 36 (including equations 1 and 2) describe the process for computing such scores:

Equation (1) is illustrated in FIG. 4, in which three pages u_1 , u_2 , and u_3 have links to a page v . The authority vector's term $A[v]$ for the page v is the sum of the hub vector values $H[u_1]$, $H[u_2]$, and $H[u_3]$ for the three pages u_1 , u_2 , and u_3 . Similarly, Equation (2) is illustrated in FIG. 5, in which a page v has links to ... three pages u_1 , u_2 , and u_3 . The hub vector's term $H[v]$ for the page v is the sum of the authority vector values $A[u_1]$, $A[u_2]$, and $A[u_3]$ for the three pages u_1 , u_2 , and u_3 ... It will be seen that, as the successive iterations proceed, the hub and authority vector values will increase based on the number of links common to the page populations. The pages unrelated to the desired subject matter, which will have relatively few links to the pages related to the desired subject matter, will have relatively low values, and will, in effect, be "weeded out."

There is nothing in the foregoing passage or anywhere else in Kleinberg that discloses or suggests determining the strength of the inferred relation by computing a first array having entries comprising first and second strengths; determining a second array as a mathematical function of the first array; and determining a weighted sum of entries selected from the first and second arrays, where the weighted sum corresponds to the strength of the inferred relation. Rather, in Kleinberg, the score assigned to a page is calculated as the sum of the links to the page from other pages belonging to the initial set of pages or alternatively, as the sum of links from the page to other pages belonging to the initial set of pages. Furthermore, the score assigned to a page is not disclosed or suggested to indicate the strength of an inferred relationship between the page and another page. Rather, as described in the foregoing passage of Kleinberg, the score indicates whether or not the page is a hub or an authority.

By contrast to claim 1, in Kleinberg, the existence of relationships between pages (e.g., belonging to the same neighborhood) is determined by partitioning the scores of the pages into ranges and designating those pages whose scores fall within a particular range as belonging to a neighborhood. For example, the passage at col. 9, lines 39-42 describes selecting the pages having the k largest scores: “[a] preferred output technique, given in steps 38 and 40, is to scan the hub and authority vectors H and A, to find the k largest terms, k having been specified in step 2, and being presumptively smaller than the number of pages identified.” There is nothing in Kleinberg that discloses or suggests determining the strength of an inferred relation between first and second Internet objects as in the method of claim 1.

DualNAVI is directed to an information retrieval system which supports document associative and keyword associative searches. There is nothing in DualNAVI that remedies the foregoing deficiencies of Kleinberg with respect to claim 1.

For at least the foregoing reasons, claim 1 is believed to be patentable over Kleinberg.

Amended independent claims 14, 26, 29 and 33 include limitations that are similar to those described above with respect to claim 1. These claims are also believed to be allowable for at least the same reasons noted above.

Each of the dependent claims is also believed to define patentable features of the invention. Each dependent claim partakes of the novelty of its corresponding independent claim and, as such, has not been addressed specifically herein.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicants : Venkateswarlu Kolluri et al.
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Applicants' undersigned attorney can be reached at the address shown below. All telephone calls should be directed to the undersigned at 617-521-7896.

Enclosed is a three-month Petition for Extension of Time Fee. Please apply any other charges or credits to Deposit Account No. 06 1050, referencing Attorney Docket No. 19084-540001.

Respectfully submitted,

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Paul A. Pysher
Reg. No. 40,780

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110
Telephone: (617) 542-5070
Facsimile: (617) 542-8906